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ABSTRACT

This literature review observes that (1) there is an increasing need for enhancing job literacy skills among workers; (2) workplace literacy programs cover both basic literacy and job-related technical training; (3) successful curricula use job-related tasks and materials; and (4) management needs to be heavily involved and committed if a program is to be successful. A study by the U.S. Department of Labor and the American Society for Training and Development shows that employers want workers with skills in many areas--not just skills in reading, writing, and computation. Successful programs use the practices often recommended when teaching adults, including clearly defining objectives, using materials relevant to the students' needs, giving frequent feedback, and using evaluation to improve program effectiveness. Successful programs include a needs assessment and a literacy audit. The curriculum should be organized by job tasks, be built on employees' knowledge of the job content, give employees an opportunity to work together and learn from each other, and link the goals of the company and participating employees. Guidelines for development of work-related curriculum materials are found in "Functional Context Education: Workshop Resource Notebook" (Sticht, 1987) and "The Handbook for Trade-Related Curriculum Development" (Felton, 1981). Pretesting and posttesting of actual job tasks and interviews with employees and supervisors should be used. Appendix A contains a five-step process for performing a literacy audit. Appendix B contains: (1) a comprehensive chart providing information about four different types of evaluation; and (2) some prototype evaluation forms used by the Massachusetts Workplace Initiative programs. (The document includes a 26-item bibliography.) (CML)

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WORKPLACE LITERACY PROGRAMS

A REVIEW OF THE LITERATURE

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WORKPLACE LITERACY PROGRAMS

Introduction

A review of the literature on workplace literacy suggests that (1) there is an increasing need for the enhancement of job literacy skill among workers, (2) present workplace literacy programs cover both basic literacy and job-related technical training, (3) successful workplace curricula are designed using job-related materials and tasks, and (4) in order for workplace literacy programs to succeed, management needs to be heavily involved and committed.

A major study by the U. S. Department of Labor and the American Society of Training and Development reveals that employers want workers with skill in more than reading, writing and computation. They want workers with skill in (1) learning to learn, (2) listening, (3) problem-solving, (4) creative thinking, (5) self-esteem/goal-setting/career-development skills, (6) interpersonal/teamwork/negotiation skills, and (7) organizational effectiveness and leadership.

In order to meet the demand for more highly skilled workers, an increasing number of businesses are offering educational programs to their employees. The more successful programs are currently being touted as models. Guidelines for development of new programs are based on these models.

General Program Guidelines

In general, successful workplace skills programs follow the rubrics of teaching practices that are recommended for adults. That is, (1) goals and objectives are clearly defined, (2) teaching materials are relevent to the student needs, (3) feedback is given frequently, and (4) evaluation is used to improve program effectiveness.

Two important prerequisites to a workplace basic skills program are a **needs assessment** and a **literacy audit**. The needs assessment is to determine (1) the goals of the company and the employees, (2) what training program would best meet these goals, and (3) where and how a basic skills improvement program would fit into the company's overall human resources planning and development. The literacy audit is to pinpoint the source of basic skill inadequacies of workers.

Curriculum Design

Adults need to see immediate practical value in what they are learning. Therefore, the workplace literacy skills curriculum should be designed to include materials and tasks that apply to the actual job of the worker. Employees need to learn to integrate skills in reading, writing, math and problem solving with other skills.

In general curriculum should (1) be organized by job tasks, (2) build on employees' knowledge of the job content, (3) give employees an opportunity to work together and learn from each other, and (4) link the goals of the company and participating employees.

Materials

Specific workplace instructional materials will often have to be developed because most commercial adult basic education materials use general topics for instruction. The most current and valid guidelines for development of work-related curriculum materials are found in the Functional Context Education: Workshop Resource Notebook (Sticht, 1987). This form of curriculum development has a cognitive science framework which emphasizes human learning as an active, information-seeking process rather than an automatic response process based on memorization or rote-learning.

The text, workbook, and teacher's guide developed by Dr. Sticht and his associates for an electronics technician's course are exemplary models of work-related educational materials. Problem-solving, "mental models", basic electricity and electronics (BE&E), reading, writing, mathematics , and "world knowledge" of the student are incorporated and interrelated in these materials.

Another valuable resource for material development is The Handbook for Trade-Related Curriculum Development (Felton, 1981).

Evaluation of Program

It is crucial that program evaluation be carefully planned before beginning a workplace education program. The evaluation should include provisions for (1) pre and posttesting based on simulations of actual job tasks, and (2) interviews with employees and supervisors.

Conclusion

General job literacy measures show an increasing mismatch between job requirements and workers' skill levels. The dropout rate in schools is increasing (Stedman & Kaestle, 1987). Job requirements today go far beyond what has generally been considered as comprising "basic skills" or "functional literacy" (U. S. Dept of Labor & ASTD, 1988).

Attempts to solve the problems of workplace skill deficits are presently being refined, but a workplace basic skills development program will probably be successful if recommendations from major research reported in this paper can be followed.

WORKPLACE LITERACY PROGRAMS

PURPOSE OF REPORT

This report (1) summarizes the literature on workplace literacy, (2) outlines model programs, and (3) suggests a program design with recommended curriculum for the Program for Occupational Skills Training (POST).

From a review of the literature on workplace literacy it can be concluded that:

(1) There is an increasing need for the enhancement of job literacy skill among workers.

(2) Present workplace literacy programs generally cover basic literacy and job related technical training.

(3) Successful workplace literacy curricula is designed using job-related materials and tasks.

(4) In order for workplace literacy programs to succeed, management needs to be heavily involved and committed.

BACKGROUND AND NEED

Background

The term "literacy" is generally considered to mean "basic skills" such as acquiring sound-symbol relationships for reading or remediating low grade level reading ability. In actuality, however, literacy is a collection of skills, abilities and knowledge needed to function in daily life on the job and in society.

"Workplace literacy" is, therefore, specific to the work setting and each workplace needs its own definition. For

example, in one work setting, "literacy" may mean reading blueprints, and in another it may mean figuring percentages. Writing skill may be crucial in one setting and skill in personal relations may be crucial in another.

Despite the fact that many skills fall under the literacy heading, the transferable skills of reading, writing, reasoning, and problem solving more often than not underlie competent functioning in the workplace of today. As a result of technological advancements higher reading and writing levels are needed. In addition, job skills needed by a worker today may be different tomorrow, often creating a mismatch between the job and the worker's training and limiting his mobility.

The September 10, 1988 issue of Business Week magazine devoted a special report to the need for human capital. This extensive coverage details the frightening gap between levels of literacy needed on the job and levels of literacy of applicants for those same jobs. For example, retail sales jobs require a level of reading, writing, and computing that only an estimated 22% of new employees have.

In a joint report from the U. S. Department of Labor and the U. S. Department of Education, The Bottom Line: Basic Skills in the Workplace, 1988, it was reported that companies have begun to spot the symptoms of basic skills problems in the workforce. Among the companies participating in the survey:

(1) 30 percent reported secretaries having difficulty reading at the level required by the job.

(2) 50 percent reported managers and supervisors unable to write paragraphs free of grammatical errors.

(3) 50 percent reported skilled and semi-skilled employees, including bookkeepers, unable to use decimals and fractions in math problems.

(4) 65 percent reported that basic skills deficiencies limit the job advancement of their high school graduate employees.

(5) 73 percent reported that such deficiencies inhibit the advancement of non-graduates. (p.12)

The Hudson Research Institute's report, Work Force 2000, (Packer, 1988), presented the following projections for an expected increase of about 25 million jobs:

(1) Approximately 40 percent, or 10 million jobs will be professional or technical positions requiring language skills of level 4 or better. (A U. S. Labor Department standard rates jobs on a scale of 1 to 6. A level 1 job requires a vocabulary of 2,500 words and the ability to write a simple sentence. A level 6 job requires the use of technical journals, financial reports and legal documents).

(2) Another 58 percent, or 15 million jobs, will be marketing and sales, administrative, services, supervisor and similar positions requiring skill levels between 2 and 3.9. (Level 2 requires a vocabulary of 5000-6000 words, a reading rate of 190-215 words per minute and the ability to write compound sentences. Level 3 requires ability to read safety rules and equipment instructions, and the ability to write simple reports.

(3) Only 2 percent, or about a half million jobs, will require language skills less than 2.5.

Based on the National Assessment of Educational Progress (NAEP) conducted by Princeton's Educational Testing Service, 25 million new workers will have to improve from 2.6 to at least 3.6 on the Labor Department scale.

Need

The consequences for employers of workers with limited basic skills are (a) lower productivity, (b) poor product quality, (c) lost management time, and (d) restricted upward mobility of workers. These consequences in turn impact upon the general economic productivity of the state (Massachusetts Workplace Initiative, 1988).

The consequences for the workers with limited basic skills are (a) lower living standards, (b) lower self-esteem, (c) restricted ability to solve problems, and (d) restricted ability to fulfill their needs and accomplish their goals.

The search for solutions to the workplace literacy problems has taken several directions. Many businesses are now forming partnerships with local Departments of Education in order to cooperatively improve the quality of schooling. The Job Training Partnership Act, Job Corps, State Departments of Labor, State Departments of Education, Community Colleges, Labor Unions, and State Literacy Councils all are focusing in various degrees of intensity on improving literacy of the unemployed and the underemployed.

A two-year joint project of the U.S. Department of Labor and the American Society for Training and Development (ASTD) was funded in 1986 to research exemplary training and development practices and present recommendations for establishing and running a basic workplace skills training program. Four books based on the research will be published in mid-1989 covering (1) the Organization and Strategic Role of Training (2) Basic Workplace Skills, (3) Technical Training and (4) Measuring Training. There will also be a manual providing a model for running a basic workplace skills training program.

A preliminary report from the ASTD project titled Workplace Basics: The Skills Employers Want reveals that employers want much more than reading, writing, and computational skills from their employees. Additionally, they want workers with skill in (1) learning to learn, (2) listening and oral communication, (3) problem-solving, (4) creative thinking, (5) self-esteem/goal-setting-motivation/personal and career development skills, (6) interpersonal skills/negotiation/teamwork, and (7) organizational effectiveness/leadership.

Although the workplace literacy problem appears to be only a recent occurrence, some large corporations have offered extensive education programs to their employees for many years. The U. S. Military has been in the business of both technical and basic training since World War 11 and their programs which were largely spearheaded by Dr. Thomas Sticht, (President, Applied Behavioral and Cognitive Sciences, Inc., San Diego, CA.) are now being heralded as exemplary models for workplace basics curriculum development (Shanker, 1988).

CURRENT PROGRAMS

Current workplace education programs appear to be extremely varied. Some are focused strictly on basic literacy and use standard adult basic education materials such as the English Literacy Progression Series (Warren Foundation, 1988). Others use materials tailored to the workplace. Expected outcomes of the programs also vary. Some program goals are aimed at general literacy. Others are targeted to assist employees toward promotion to specific jobs.

The majority of the programs reported in the literature are targeted for minority groups that have minimal English language skills. Many programs also offer adult basic education leading to a high school degree equivalency (GED).

Classes are held in conference rooms, dining rooms, employee workrooms, and basements. Prior to program development and implementation, some form of needs assessment is undertaken. The assessment form ranges from an informal "perceived need" by an interested manager or supervisor to an expensive "literacy audit" from a source external to the company.

Key Features

Key features of some model programs are summarized below. Details about these models can be found in the materials packet included with this report.

Recruitment. One company, T. J. Maxx, in Worcester, Massachusetts announced its upcoming literacy program in five different languages by flyers that were distributed in envelopes and posted on bulletin boards. Officers of the company toured

the warehouse for a whole day, describing the program and recruiting students. The first week of the program was devoted to student assessment.

Baystate Medical Center, also located in Massachusetts, advertised its program in (1) a catalogue of course offerings through the state office of education and training, (2) the in-house newsletter, and (3) on closed-circuit TV. On the television show, a recent GED graduate talked about the program and how it helped him and his career.

In three Massachusetts industrial laundries, the work of recruitment fell mainly to a human resource specialist, who talked individually to staff she knew to be limited in English proficiency. Employees were also released to attend an orientation program conducted by the educational provider.

The Work Connection, a non-profit organization sponsored by the International Union of Electrical Workers, conducted a program called "A Computer Literacy Program". In this case, three local unions publicized the course through company bulletin boards and union newsletters. They also used aggressive individual recruiting by union leaders.

Some companies, such as the Coco Palms Hotel on Kauai in the Hawaiian Islands, advertise their program by notices included in pay check envelopes.

Participants. In some company education programs such as those of Polaroid, Onan Manufacturing, and Rockwell Corporation, all employees are participants. Other companies offer programs to only hourly-wage employees. Some companies select participants according to assessed skill deficiencies.

In most programs, participation is voluntary. The success of the programs, however, appears to be directly related to incentives. These incentives may be promotion, full or partial release time, or full or partial tuition refund.

Program Start-Up. The initial phase of all reported programs is assessment. Most use standardized tests such as the TABE, the Stanford Diagnostic, or the EDL McGraw-Hill Reading Test. However, standardized tests such as these are not appropriate for the target population (Stein, 1986). Assessment, therefore, is a major source of concern.

One solution to the assessment problem is to use a competency-based instructional model. In this model, clear objectives for a module or course are presented and all testing is directly related to these objectives.

Program Description. The majority of the workplace literacy programs reported in the literature focus on English as a Second Language and on adult basic education needed to receive a GED. Some exemplary programs include courses in a variety of subjects such as algebra, problem solving, general science, and computer literacy. The course offerings are based on the needs of the company providing the program.

In-house programs generally meet for two or three times a week for two to three hours each meeting. Some companies give their employees release time during work hours to attend classes. Others give only a tuition refund if the course is completed.

A wide range of materials are used including commercial academic materials and workplace related materials. According to some reports, it is often initially difficult to use work-related

materials because of the low reading skill level of the students.

Instruction is provided in various ways. Instructors may be hired from local educational institutions or from within the company. Sometimes volunteer tutors or coaches are recruited and directed by a curriculum supervisor. In some cases, employees are merely encouraged to attend classes offered by local adult education centers or technical and community colleges.

Evaluation. Measurement of success is reported as a problem area. Currently, most evaluation appears to be informal. Surveys from students and supervisors are the most popular avenues for providing feedback. Tests given by the instructor and GED completion rates are two other reported forms of evaluation.

Barriers. According to Astrein, et. al., 1987, there are several barriers to student participation. Many workers who need workplace education have second jobs. In this situation they are unlikely to attend classes on their own time. Transportation and child care problems prevent flexibility in the worker's discretionary "off-the-job" hours. Some cultures frown on upward mobility for women. In some cases, entry level workers are satisfied with their work status and have no motivation for further learning.

Personal problems strongly affect a worker's ability to concentrate on self-improvement (Hubbard, 1988). If a worker has a problem with depression or alcoholism, for example, he will not be a good candidate for consistent class attendance. Relationship difficulties can also create major obstacles to career concerns. Low self-esteem and fear of job loss may

prevent workers from admitting they need training. The term "literacy" itself when used in labeling courses seems to have a negative connotation that sometimes acts as a barrier to participation (Skagen, 1986).

Incentives. The success of workplace education programs, at least initially, appear to be directly related to external incentives. Not surprisingly, The two most effective incentives are promotion and full release time for attending classes. Other incentives currently used are partial release time and full or partial tuition refunds for approved completed courses.

Reportedly, for many workers, after initial success in a program, the sense of better control over their lives serves as an incentive to continue learning.

MODEL PROGRAMS

Occupational Literacy Training in the U.S. Department of Defense: The FLIT Program (Sticht, et. al., 1986)

In a major study named Project FLIT (Functional Literacy) sponsored by the U. S. Army it was found that adult students can gain "a fair amount of competence in a limited domain of knowledge in relatively brief periods of time (Sticht, 1987)." Training was provided using job-related materials to teach both reading-to-do and reading-to-learn tasks. Development, products and outcomes of the project are summarized below.

Development

Minimum Competency Level. Identifying the minimum competency level for job-related reading was the initial task in the project. Three approaches used to establish reading

requirements of the jobs in question were (1) direct measures of job knowledge and job performance, (2) readibility (reading difficulty) level determination of manuals used in learning and doing the job, and (3) determination of specific job reading tasks inherent in performing the job.

Job knowledge and performance were measured by written tests and hands-on demonstrations. The literacy requirement was determined by the lowest level at which no more than a chance proportion of men fell into the bottom quartile of the tests.

The readability level of job materials was determined by an index constructed especially for Army materials. This index, called FORCAST, estimated that more than half of the job manuals were at greater than eleventh grade reading level.

Job Reading Task Tests (JRTT's) were constructed as criterion-referenced measures of job reading performance. The tests consisted of the most frequently used types of reading materials identified by interviews with job performers.

The conclusion drawn from these approaches to reading level requirements was that the lowest literacy level needed for functioning on the job was seventh grade. Therefore, the remedial training was geared to produce no less than seventh grade reading level.

Training Program. A training program was developed to provide functional literacy at the minimal job requirement level. This training had to be accomplished in six weeks time. Entry into the program was determined by three screenings at spaced intervals over the basic training period. The program itself consisted of three strands; reading to do, reading to

learn, and a free reading strand.

Six instructional principles selected were (1) individualized instruction, (2) performance-oriented instruction, (3) functional instruction, (4) student-assisted instruction, (5) programmed instruction, and (6) quality control monitoring of performance.

Evaluation. Evaluation of the program consisted of tests and questionnaires. In general, the results of the training strongly suggested that gains in reading are specific to the instructional domain. General literacy does improve with job-related instruction, but the major gains were in the job-related reading tasks.

Massachusetts Workplace Education Initiative

The state of Massachusetts is currently funding a Workplace Education Initiative sponsored by the Executive Office of Economic Affairs, the Department of Education, and the Executive Office of Labor. The goals initiative are to (1) provide workers with the opportunity to develop basic skills necessary to upgrade their positions in the workforce and increase their earning power, (2) to increase employer awareness of the extent and cost of the functional illiteracy of their workers, (3) to develop awareness among unions of the social and economic barriers caused by adult illiteracy, (4) to develop partnership models for improving basic skills, and (5) to promote strong ties between education, employment, and training communities.

Six programs were given workplace literacy grants in 1986. Funding was restricted to programs teaching basic skills;

therefore all six programs emphasized training in English as a Second Language, and Adult Basic Education. One program included computer-assisted instruction in order to introduce computer literacy to the students. All programs were run in partnership between key actors at the local (company) level and state education agencies.

In July, 1987, a detailed case study report was made on the six programs. The programs all had generally favorable results. A major caution from the report was that successful programs must have strong backing from management and good cooperation between the local and state levels of partnership.

Other Model Programs

In their report, Adult Literacy: Industry-Based Training Programs, Fields, Hull, and Sechler (1987) have detailed model programs of seven companies. The companies are (1) Polaroid Corporation, (2) Onan Corporation, (3) Rockwell, International, (4) Philadelphia Hospital and Health Care, District 1199C, (5) Planters Peanut Company, (6) R. J. Reynolds Company, and (7) Texas Instruments, Inc.

The program features detailed in this report are (1) history, (2) skill requirements of the workforce, (3) participation, (4) structure, (5) instructional staff, and (6) evaluation.

RECOMMENDATIONS FOR SUCCESSFUL PROGRAMS

Successful on the job literacy programs achieve a "fit" among three components: (1) course content, (2) requirements at hand and (3) motivation of participants. The role of the educator and

program designer is not to impose an agenda, but to identify what the participants want and what the particular situation requires. (Skagen, 1986)

This section contains summaries of recommended practices for (1) program design, (2) training needs assessment, (3) a literacy audit, (4) recruitment, (5) curriculum design, (6) materials, and (7) program evaluation.

General Program Design Guidelines

The following recommendations for a successful workplace skills program are found in The Bottom Line, a joint report from the U. S. Department of Education and the U. S. Department of Labor (1988).

(1) Both goals and the projected results for the company and for participating employees are clearly stated.

(2) The program has the active support of top-level management.

(3) Employers use recruiting techniques that are appropriate to the employees they wish to reach.

(4) The planning and on-going operation of the program involves management, human resource development personnel (if applicable), supervisors and workers.

(5) Explicit standards are used for measuring program success. This information is shared with participating employees and determined with the help of their supervisors.

(6) Pre-tests that simulate job situations and tasks are used to diagnose employee needs and strengths

and to guide the development of learning plans for participating employees.

(7) Employees personal goals are solicited and incorporated into learning plans.

(8) Instructional methods, materials, and evaluation strategies are tied directly to learning goals.

(9) Instructors know the basic skills needed to perform job tasks in the specific division or department for which personnel will be trained.

(10) Employees and supervisors get frequent feedback on their progress and that progress is carefully documented.

(11) Evaluation data are used to improve program effectiveness.

(12) Post-tests that simulate job situations and tasks are used to measure learning. (p. 40)

Specific Program Guidelines

Based on a two year research project, the American Society for Training and Development and the Department of Labor have presented an applied approach model for success in workplace basics programs (Carnevale, A., Gainer, L., & Meltzer, A., 1988).

This applied approach is a multi-stage process involving investigation, advocacy, and specialized curriculum development. The recommended steps do not have to be followed sequentially, but are all important for a successful program.

Step 1. Identify job changes or problems that may

require basic workplace skills training.

(1) Assess the extent of the need for training due to job changes or problems.

(2) Form a company-wide representative advisory committee.

(3) Perform a job analysis for selected jobs.

(4) Document employee performance deficiencies on the selected jobs.

(5) Identify target population for training.

(6) Build cooperation with unions

Step 2. Build Management and Union Support to Develop and Implement Training Programs in Workplace Basics.

(1) Make the case for skills training programs in workplace basics.

(2) Build support for skills training in workplace basics.

Step 3. Present Strategy Plan to Management and Unions for Approval

Step 4. Perform a Task Analysis of Each Selected Job or Job Family.

(1) Select the jobs to be analyzed.

(2) Develop a preliminary list of duties and tasks performed on the jobs to analyzed, focusing on basic workplace skills.

(3) Review, refine and revise the preliminary list of skills using expert committees.

(4) Verify and validate the skills necessary for the jobs.

(5) Perform a task detailing focused on basic work-place skills for each task selected for inclusion in the training program.

Step 5. Design the Curriculum.

(1) Design a performance-based/functional context instructional program.

(2) Determine evaluation instruments, recordkeeping, and documentation.

(3) Determine budget.

Step 6. Develop the Curriculum.

(1) Prepare the course outline.

(2) Develop individual lesson plans.

(3) Develop instructional materials.

Step 7. Implement the Training Program.

(1) Select and train the instructional staff.

(2) Counseling for trainees important.

Step 8. Evaluate and Monitor the Training Program.

(1) Begin on-going program monitoring.

(2) Connect back to management.

Training Needs Assessment

Identification of needs is step one in the process of program development. The following are suggested guidelines for a training needs assessment (Horton, 1984).

First, the assessment team needs to know the answers to

(1) What are the major influences of change that would be affecting workers and their supervisors in the near future?

(2) How aware are the workers and supervisors of anticipated changes and possible training opportunities?

(3) How receptive is the total workforce of training opportunities?

(4) What is the profile of the workforce in terms of the education and skill level?

An actual schedule suggested for use by the assessment team is as follows:

Week One..orientation meeting with key personnel to draft interview questionnaire.

Week Two..Interviews with key resource persons are conducted. Interview questions are modified, based upon information received to date.

Week Three..Interviews are completed. Questionnaires are designed for the workforce.

Week Four..Pilot applications of questionnaires are held. Modifications are made to the surveys and they are typeset and printed.

Week Five..Questionnaires are administered. Surveys are collected and computer analyzed.

Week Six..Data from the questionnaires are finally analyzed and an abstract presented to management.

Eight weeks rather than six might be a better time frame in the event that more time is needed for in depth interviews with workers who have undergone specific training. Structured interviews are invaluable and the piloting of these interviews with supervisors is highly recommended for two reasons. One, it prevents embarrassing assumptions by the assessment team, and two, it gives the supervisors a feeling of "ownership" in the project.

Other questions that may be asked prior to launching a workplace basic skills program are suggested in a preliminary report from Plan, Inc., a non-profit literacy provider in Washington D. C. (Fox, 1988). These questions are:

(1) What reading competencies do employees currently have? What competencies does the employer require? What are the training needs in terms of increasing general and specific reading abilities?

(2) What are employees being asked to read? What is the reading level of the materials they are expected to read?

(3) What are the goals of the company and employees in upgrading or furthering productivity, job performance, promotions, etc.? What training program or objectives would best meet these goals? Where and how will a basic skills improvement program fit into the company's overall human resources planning and development? (p. 1)

Literacy Audit

If an employer is not sure of the basic skill deficiencies of his employees, or if skill deficiences appear with changes in job requirements, a literacy audit can be used to pinpoint the source of the inadequacies. Following are the five basic steps for performing a literacy audit (U. S. Dept. of Labor & U. S. Dept. of Education, 1988). Details for each step are found in Appendix A.

(1) Observe employee(s) to determine the basic skills they must use in order to perform their jobs effectively.

(2) Collect all materials that are written and read on the job to determine the degree of skill proficiency an employee must have to do the job well.

(3) Interview employees and their supervisors to determine their perception of the basic skills needed to do their jobs.

(4) Determine whether the employees have the basic skills needed to do their jobs well.

(5) Build tests that ask questions relating specifically to the employees' job or job group.

Recruiting the Trainees

It appears that recruitment of trainees for literacy improvement programs is sometimes a problem. Adults who need basic skills training, particularly if they have hidden their deficiency for years, are often quite sensitive about admitting their problem. Some are also afraid that admitting a problem will cause them to lose their jobs. Therefore, the following strategies should be applied whether the program is voluntary or

mandatory (U. S. Dept. of Labor & U. S. Dept. of Education, 1988).

(1) Package and present the program as part of the regular training agenda. Don't call it literacy, or even basic skills. Instead, choose a neutral or positive title such as the Honeywell Corporation's "Language Working Program" or Ford's "Skills Enhancement Program".

(2) Include supervisors in the planning process so that they can help assure workers that their jobs are not in jeopardy.

(3) Include workers in the planning process so that they can add their perspective.

(4) Encourage "sales" presentations of the program to employees by people they trust such as other employees or the union, if one exists.

(5) Make the goals of the program very clear and tie them, whenever possible, to incentives for participation such as learning how to use new and exciting technology, prospective job openings, or meeting personal goals.

(6) Locate programs at an attractive, comfortable, and permanent site that doesn't look like a school classroom for children. It is also good for classes to be held on the workplace premises rather than someplace apart from other activities.

(7) If possible, schedule training wholly or partially on company time. This underlines the company's commitment to the program and makes it easier for students to attend. If this is not possible, then schedule classes with flexibility so that conflicting outside responsibilities don't force trainees to drop

out.

Curriculum Design

Adults need to see immediate practical value in what they are learning. Therefore, the workplace literacy skills curriculum should be designed to include materials and tasks that apply to the actual job of the worker. Employees need to learn to integrate skills in reading, writing, math and problem solving.

General suggestions for curriculum design (U. S. Dept. of Labor and U. S. Dept. of Education, 1988) are as follows:

(1) Organize by job tasks, not by discrete basic skills.

(2) Include problems and simmulated situations that call for the use of basic skills as they will be used on the job.

(3) Provide opportunities to link basic skills and thinking together.

(4) Build on the employees knowledge of the job content.

(5) Use actual job materials as instructional texts.

(6) Give employees the opportunity to work together and learn from each other.

(7) Link to the goals of the company and participating employees.

Key program principles suggested in the Business Council for Effective Literacy Bulletin, No. 2 , (1986) are:

(1) Teach basic skills using the content of specific jobs.

(2) Teach reading strategies that are appropriate to workplace needs.

(3) Build on the employee's prior knowledge of a job content

area to teach new concepts.

(4) Customize the curriculum to suit the needs of the company and the specific jobs that must be done.

(5) Use materials actually used on the job for instruction. State learning objectives clearly and explicitly as they relate to skills needed for job performance.

When designing instruction, Skagen (1986) suggests using job descriptions as a starting point. Job descriptions often express knowledge and skill needed for specific jobs, and often needed vocabulary can be identified.

Specific instructional recommendations (French, 1987) are as follows:

(1) Analyze the literacy tasks required by the job. Examine the differences between reading-to-do and reading-to-learn. Examine lists of generic skills developed by others. Remember, however, that requirements of jobs change, making it difficult to establish a definitive list.

(2) Teach reading as a process of reasoning-thinking. Encourage the use of predictions before reading and confirmation or adjustment of predictions after reading.

(3) Use literacy skills to solve problems either created by the instructor or the class or actual problems from the job.

(4) Teach ways of organizing information, establishing a hierarchy of ideas and information, and relating items.

(5) Instruct in critical reading and thinking.

(6) Incorporate writing instruction into the reading instruction.

(7) Analyze and use relevant text structure as a source of information for comprehension.

(8) Identify and teach pertinent vocabulary.

(9) Develop job-related reading-to-do tests to match the actual requirements of the job. Unfortunately, the commercial tests used are often not appropriate for adults and frequently have been developed for reading-to-learn rather than reading-to-do.

(10) Involve the students in the process of identifying needs and posing and solving problems.

(11) Be prepared to work with students not only on job-related skills, but with their attitudes, feelings, and anxieties of being back at school.

(12) Devote sufficient time to instruction to insure progress. Instruction provided for a short period of time may yield few gains.

The information in item 12 was confirmed in the preliminary report from Plan, Inc. (Fox, 1988). Their program staff found it essential that adult literacy learners have a minimum of 24 weeks, four hours per week, training.

Materials

Specific workplace instructional materials will often have to be developed because most commercial adult basic education materials use general topics for instruction. The most current and valid guidelines for development of work-related curriculum

materials are found in the Functional Context Education: Workshop Resource Notebook (Sticht, 1987). This form of curriculum development has a cognitive science framework which emphasizes human learning as an active, information-seeking process rather than an automatic response process based on memorization or rote-learning.

The text, workbook, and teacher's guide developed by Dr. Sticht and his associates for an electronics technician's course are exemplary models of work-related educational materials. Problem-solving, "mental models", basic electricity and electronics (BE&E), reading, writing, mathematics , and "world knowledge" of the student are incorporated and interrelated in these materials.

Another valuable resource for material development is The Handbook for Trade-Related Curriculum Development (Felton, 1981).

There are many types of commercial instructional materials to use in teaching general basic skills to adults. Hard copy materials which sometimes have accompanying audio tapes most frequently use general topics rather than work-related topics.

The American Newspaper Publishers Association encourages the use of the newspaper as a text and provides examples of successful literacy programs. Read Today (Hunter & McNearney, 1988) is a ten lesson model for using various sections of the newspaper for instruction. The Literacy Volunteers of America, Inc. have a publication called Read All About It (1984) which is a tutor handbook for use with the newspaper.

Computer-assisted tutoring such as the IBM PALS system affords a flexible, individualized training set-up. The

successful Job Skills Education Program (JSEP), a computer-based basic skills program created for the army is currently being adapted for civilian use. The new program will be piloted in 1989 at four locations.

Interactive-laser-videodisc (IVD) is currently touted as being an instructional method that reduces time to learn by 30% or more, and increases retention (Packer, 1988). This state-of-the-art instruction uses a computer program, videodiscs and accompanying written and audio-taped materials. IVD instruction requires a large initial monetary investment, but may be far less expensive in the long run than alternative instructional methods.

Evaluation of Program

Appendix B contains (1) a comprehensive chart providing information about four different types of evaluation and (2) some prototype evaluation forms used by the Massachusetts Workplace Initiative programs.

Specific recommendations for program evaluation (U. S. Dept. of Labor & U. S. Dept. of Education, 1988) are as follows:

(1) Construct and administer job-specific pre- and posttests based on the results of a literacy audit. Tests should include simulations of actual job tasks. If possible, give periodic assessments of this type throughout the course of the program.

(2) Talk to the employees and their supervisors to find out what they believe to be the on-going and final results of the training. Look for signs of changes in the employees' self-

confidence in class and on the job. Note positive changes in work habits such as improved attendance, punctuality, and teamwork skills.

(3) Supervisors should monitor classes to make sure that instruction is on track with the learning goals of the employees and the overall goals of the company. (p. 37)

For both initial assessment and posttesting, the competency-based model seems to offer the most valid measurement device. Clear objectives are readily quantified. "Hands-on" performance can also be effectively used as an evaluation tool with the competency-based model.

CONCLUSION

General job literacy measures show an increasing mismatch between job requirements and workers' skill levels. The dropout rate in schools is increasing (Stedman & Kaestle, 1987). Job requirements today go far beyond what has generally been considered as comprising "basic skills" or "functional literacy" (U. S. Dept of Labor & ASTD, 1988).

No single solution to the problems of workplace skill deficits will ever be available because every company's needs are different. However, a workplace basic skills development program will probably be successful if the general guidelines from major research reported in this paper are followed.

APPENDIX A

How to Perform a Literacy Audit

1. Observe employee(s) to determine the basic skills they must use in order to perform their jobs effectively.

- Watch the employee(s) throughout a workday to be sure all tasks are observed. Continue this observation over a period of time if tasks change periodically rather than daily.
- Record each time the worker reads, writes, or does an arithmetic calculation.
- Note the setting in which these basic skills activities take place.
- Note the materials used by the employee to perform the tasks involving basic skills activities.
- Determine the purpose of those tasks.
- Be aware of whether the tasks are performed individually or in groups.

2. Collect all materials that are written and read on the job to determine the degree of skill proficiency an employee must have to do the job well.

- Include memoranda, telephone messages, manuals, bills of sale, and forms such as inventory lists, balance sheets, and requisition slips.
- Examine the materials to determine reading levels, necessary vocabulary, and style.
- Analyze the content of these materials to determine their function.

3. Interview employees and their supervisors to determine their perception of the basic skills needed to do their jobs.

- Note the skills that the top-performing employees say are most important. Then ask them which skills they use most and how they use them.
- Ask the supervisors which skills are needed for job performance, identifying those deemed critical.
- Examine discrepancies, if they exist, between the employees' and the supervisors' perceptions of skills needed. One particularly good technique suggested by Mikulecky (1987) is to ask both supervisors and top-performing employees how they would break in a new employee, step by step. Questions such as "How do you decide what to do first? How do you decide what to do next?" clarify the mental processes underlying good job performance and present a fuller picture than a simple listing of tasks.

4. Determine whether the employees have the basic skills needed to do their jobs well.

- Combine the information gathered from observing the employees, collecting the materials they use, and the interviews. Then, write up a description of each of the audited jobs in terms of the reading, writing, and computation skills needed to perform them well.
- Return to the work setting to observe how or whether the tasks requiring these basic skills are performed.
- Discuss observations informally with employees and supervisors when problems are observed, to pinpoint specific areas of difficulty and concern.

5. Build tests that ask questions relating specifically to the employees' job or job group.

- Use job-related language and style.
- Use situations and formats in which the basic skills being tested will actually occur.
- Ask employees to perform the tasks that simulate what they encounter on the job.

By comparing the results of the test with the writeup of the basic skills tasks embedded in the job(s), the literacy auditor can determine whether there is a basic skills problem in the workplace and what that problem is.

From: The Bottom Line. U.S. Dept. of Labor & U.S. Dept of Education, 1988 p. 15

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APPENDIX B

WORKPLACE LITERACY PROGRAM EVALUATION

Type/Level	Purpose	Strengths	Weaknesses	Examples	Guidelines for Development
Student Reaction	Measure student feelings about a program/course	• Easy to administer • Provides immediate feedback on instructors, facilities, and program design	• Subjective • Provides no measurement of learning, transfer of skills or benefit to the organization	• "Happiness" reports • Informal student/instructor interview • Group discussion	• Design a form which can be easily tabulated • Ask questions which provide information about what you need to know: instructor effectiveness, facility quality, relevance of program content, etc. • Allow for anonymity and opportunity to provide additional comments
Student Learning	Measure the amount of learning that has occurred in a program/course	• Provides objective data on the effectiveness of training • Data can be collected before students leave the training program	• Requires skill in test construction • Provides no measurement of transfer of skills or benefit to the organization	• Written pre/post tests • Skills laboratories • Role plays • Simulations • Projects or presentations • Oral examinations	• Design an instrument which will provide quantitative data • Include pre and post level of skill/knowledge in design • Tie evaluation items directly to program learning objectives
Student Performance	Measure the transfer of training	• Provides objective data on impact to job situation	• Requires task analysis skills to construct and is time consuming to administer • Can be a "politically" sensitive issue	• Performance checklists • Performance appraisals • Critical incident analysis • Self-appraisal • Observation	• Base measurement instrument on systematic task analysis of job • Consider the use of a variety of persons to conduct the evaluation • Inform participants of evaluation process
Organization Results	Measure impact of training on organization	• Provides objective data for cost/benefit analysis and organizational support	• Requires high level of evaluation design skills; requires collection of data over a period of time • Requires knowledge of organization needs and goals	• Employee suggestions • Manufacturing indexes —Cost —Scrap —Schedule compliance —Quality —Equipment donations • QWL surveys • Union grievances • Absenteeism rates • Accident rates • Customer complaints	• Involve all necessary levels of organization • Gain commitment to allow access to organization indexes and records • Use organization business plans and mission statements to identify organizational needs

From: US. Dept. of Labor & US Dept. of Education, The Bottom Line, 1988. :p. 34

Guidebook

for

Massachusetts Workplace Education Initiative

Sponsored by:
Office of Training and Employment Policy,
(MA Executive Office of Economic Affairs)
MA Department of Education
MA Executive Office of Labor
MA Commonwealth Literacy Campaign

Prepared by:
Centre Research, Inc.

Fall 1987

#6A: Self-Documentation by Students– A Questionnaire Format

Name of Program: _____ **SDA:** _____

Name of Student: _____ **Date:** _____

This document is designed for collecting student response at the end of each term, or whenever the staff determine it would be helpful. It is intended to help the staff assess the program's major strengths and weaknesses in order to make changes that will improve the program and better meet student needs. It is not an assessment of their work or ability in any way.

1. What do you like **most** about your workplace education program?

   _____

   _____

   Why? _____

   _____

2. What do you like **least** about your workplace education program?

   _____

   _____

   Why? _____

   _____

3. What do you like most/least about the following aspects of your workplace education program?

   - **recruitment strategies**

     most: _____

     least: _____

- **methods of student assessment**

  most: _____

  least: _____

- **grouping of students/size of class**

  most: _____

  least: _____

- **scheduling of classes/attendance**

  most: _____

  least: _____

- **location, layout, size of classroom**

  most: _____

  least: _____

- **quality of the "adult" learning environment**

  most: _____

  least: _____

- **selection and design of curriculum material**

  most: _____

  least: _____

- **teaching methods and styles**

  most: _____

  least: _____

- **relationship of class experience to work (roles, responsiblities, performance, etc.)**

  most: _____

  least: _____

- **relationship of class experience to family/other relationship**

  most: _____

  least: _____

- **work related issues that could be integrated into class experience**

  most: _____

  least: _____

4. If you could change one or two things to improve your workplace education program, what would it (they) be?

   _____

   _____

   _____

   _____

#6Ea: Supervisor's Questionnaire

Name of Program: _____ **SDA:** _____

Name of Student: _____ **Date:** _____

This document is designed for use by supervisors at the end of each term. It is intended to help the supervisors periodically examine the program's major strengths and weaknesses in order to make changes that will improve the program. It is not designed to assess their work or ability in any way.

1.) In your opinion, is the workplace education program fulfilling its goals and expectations?

Yes Δ
No Δ
Why? _____

_____

_____

_____

2.) Do you notice a difference in workers who participate in your workplace education program?

Yes Δ
No Δ
Specify:

a.) S/he seems more confident about performing the job Yes Δ No Δ

b.) S/he seems more confident about speaking up at work Yes Δ No Δ

c.) S/he seems to enjoy better relations with co-workers Yes Δ No Δ

d.) Other: _____

_____

_____

_____

3.) **Have you learned anything you didn't expect to learn about yourself or your workers on account of the workplace education program?**

Yes Δ
No Δ
Describe: _____

_____

_____

_____

4.) **What else have you noticed about your workers and the workplace education program that might be useful to teachers/administrators?**

_____

_____

_____

_____

5.) **What do you think can be improved in the relationship between the worksite and your workplace education program?**

_____

_____

_____

_____

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